

Renovation inspiration

- The case study collection



Renovation inspiration – The case study collection

The reasons to renovate are many and far-reaching – from leaving a legacy for future generations and improving our health, to mitigating climate change and regenerating our economy.

Renovation is hitting the headlines once again, as global governments promote energy efficiency renovations for existing building stock as one of the best ways to help our economies recover post COVID-19. The ambitious goal is to achieve the greatest economic benefit and the greenest climate impact in the shortest possible timeframe. All while simultaneously improving our health and comfort – what's not to like?

We've collected 10 of our most interesting renovation case studies from all over the world to inspire your next renovation project. Whether it's upgrading a multi-unit house while protecting its historical façade or constructing a lightweight yet sturdy apartment on the roof of a warehouse, we've got you covered!





A warm – and safe – welcome
for moms and babies alike

Bradford Royal Infirmary, UK



Iconic heritage building,
Habitat 67, necessitates creative
restoration solutions

Habitat 67 Montreal, QC



Striking, effective and
in-budget

Hotel Theatre Figi, The Netherlands



Belmont Enclosure
renewal project

Vancouver, Canada



85 years of speed, precision
and safety

The Moscow metro, Russia



Reviving aging housing stock
for modern living

Ken Soble Tower, Canada



A master class in acoustics

The Royal Academy of Music, UK



When being fire-safe is beautiful

Bièvre towers, France



Much more than a world-class
stadium

VTB Arena park, Russia

A nighttime photograph of a city skyline, featuring several tall skyscrapers with illuminated windows and red-tipped antennas. The city lights are visible in the background under a dark blue sky.

1.4 million

As 1.4 million people move to urban environments globally each week, the challenge of maintaining healthy, safe and comfortable cities becomes even more urgent.

Source: PWC 2017 Cities and urbanisation - Unlocking the power of cities for sustainable development

A warm – and safe – welcome for moms and babies alike at Bradford Royal Infirmary



The Bradford Teaching Hospitals NHS Foundation Trust is responsible for providing hospital services to over 500,000 people across the Bradford district in the UK. Its Women's and Newborn Unit at Bradford Royal Infirmary is one of Bradford's most well-known hospital buildings, where over 200,000 babies have been born since it was established over 50 years ago.

The challenge

Built in the 1960s, the façade of the hospital's Women's and New-born Unit had never been upgraded. Heat-loss, draughts, noise and leaks were just some of the issues that made the five-storey building a cold and difficult space for patients and staff alike.



At a glance:

UK based maternity hospital discovers that teamwork – and stone wool – can future-proof a building.



Thermal properties



Acoustic capabilities



Fire resilience

For Property Tectonics, the architect and lead consultancy company who oversaw the renovation, the team also needed to meet strict criteria in terms of fire safety and energy efficiency on the project.

"We worked extremely closely with the hospital to demonstrate the robustness and safety of the design as well as the products we selected," explains Richard Rhodes-Heaton, the company's Principal Surveyor.

While the renovation work was underway, the Women's and New-born Unit had to be fully operational. This meant that everyone involved in the project had to be considerate of the patients and staff still visiting and working in the hospital.

The solution

The work on site began in November 2017. Property Tectonics decided that insulation from ROCKWOOL and ventilated façade cladding from Rockpanel were the perfect solutions to make the hospital a more comfortable and energy efficient facility for staff and patients.

To start, they installed ROCKWOOL RAINSCREEN DUO SLAB® – a thermally efficient insulation that secures a robust outer surface and a resilient inner face. Made from stone wool, RAINSCREEN DUO SLAB® is A1 fire rated as non-combustible for optimum fire resilience. It brings the added benefit of being highly resistance to wind and rain during construction, which, together with the minimal number of fixings required, made the installation quick and easy. The thermal benefits of the ROCKWOOL solution reduces heat loss and helps the hospital optimise costs by operating in a more energy efficient way.



Rockpanel Premium A2 boards fulfil the highest European fire protection standard and secure a flawless façade design with no visible rivets or screws.



Proven fire protection

Fire safety was a vital aspect of this project, and Property Tectonics needed to meet strict criteria and to demonstrate the robustness and safety of the design and the products used.

ROCKWOOL's fire protection solutions can slow the spread of flames, contain fires locally and stop them from spreading further. Resilient stone wool insulation is a key component in fire-resilient buildings, as its fibres are non-combustible and can resist temperatures above 1,000°C.

Extensive testing and reliable quality from ROCKWOOL means that the products are proven to be fire safe – and this was important following the UK Government's announcement banning combustible materials in all high rise residential buildings as well as hospitals, schools and care homes.



Watch how stone wool can act as a fire barrier

To fulfil the highest fire safety requirements for exterior cladding, Rockpanel A2 façade board was deployed to create a unique identity and authentic appearance to future-proof the building.

"When it came to selecting the cladding for the project, it was a truly group-based decision," says Richard Rhodes-Heaton. "Property Tectonics put together six different designs, and the Trust as well as the staff picked the option they preferred. It allowed us to involve everyone in the project and give them a say about how their place of work would look, which is important for employee engagement."

// *The scheme represents a great example of teamwork by hospital staff and their professional advisors - at every level - to produce a very successful outcome."*

Prof. Trevor Mole, MD Property Tectonics

Attractive and fire safe

Applied on top of an aluminium supporting structure and fixed with blind rivets, Rockpanel A2 boards were used in combination with ROCKWOOL's RAINSCREEN DUO SLAB®. The Rockpanel boards weigh very little compared to alternative board materials, such as high pressure laminate (HPL), aluminium composite (ACM) and fibre cement (FCB). Rockpanel can be easily worked with on site and without special tools, saving installation time and costs. It's recyclable and has a confirmed lifetime of 50 years. All boards are as durable as stone and resistant to the effects of moisture, temperature and the weather.

A maternity ward is a special place where the indoor environment is vital. The acoustic properties of the ROCKWOOL RAINSCREEN DUO SLAB insulation also help reduce urban noise transfer into the hospital. Its high-density makes it extremely resistant to airflow and excellent when it comes to noise reduction and sound absorption, reducing sound energy as it passes through the material.

The £1.8m regeneration successfully corrected all the issues the hospital building had – heat loss, draughts, noise and leaks, while protecting the building from bad weather and fire. The result was a much more comfortable and energy-efficient facility that staff, patients and visitors alike could enjoy.



Richard Rhodes-Heaton, Principal Surveyor at Property Tectonics, is pleased that the hospital staff were also involved in the final design choice.

"The scheme represents a great example of teamwork and excellence in project delivery by hospital staff and their professional advisors cooperating and engaging at every level to produce a very successful outcome," says Prof. Trevor Mole, MD Property Tectonics.

A hospital to be proud of

The entire team at the hospital were delighted with the renovation.

"The fact that we were able to keep services running as normal while all this work took place is testament to the support and consideration of the contractors," says Amanda Hardaker, Midwifery and Gynaecology Matron at Bradford Maternity. "We are so pleased with the finished job: the main difference is that we're insulated now and fit for the future. We've gone from having to have extra heaters on in patients' rooms to a really balmy temperature, so that we often don't even need the radiators on. And most importantly it means that we can optimise outcomes for babies. The best thing for new born babies, especially ones which are underweight and more vulnerable, is that the heat service is consistent, which it absolutely is now."



Amanda Hardaker, Midwifery and Gynaecology Matron, is delighted that the renovation ensures the stable temperature needed for new born babies.

"The result creates the right internal environment which saves energy, protects the planet and improves the look and feel of the hospital estate; all achieved whilst maintaining full operation of the Unit."

Click here

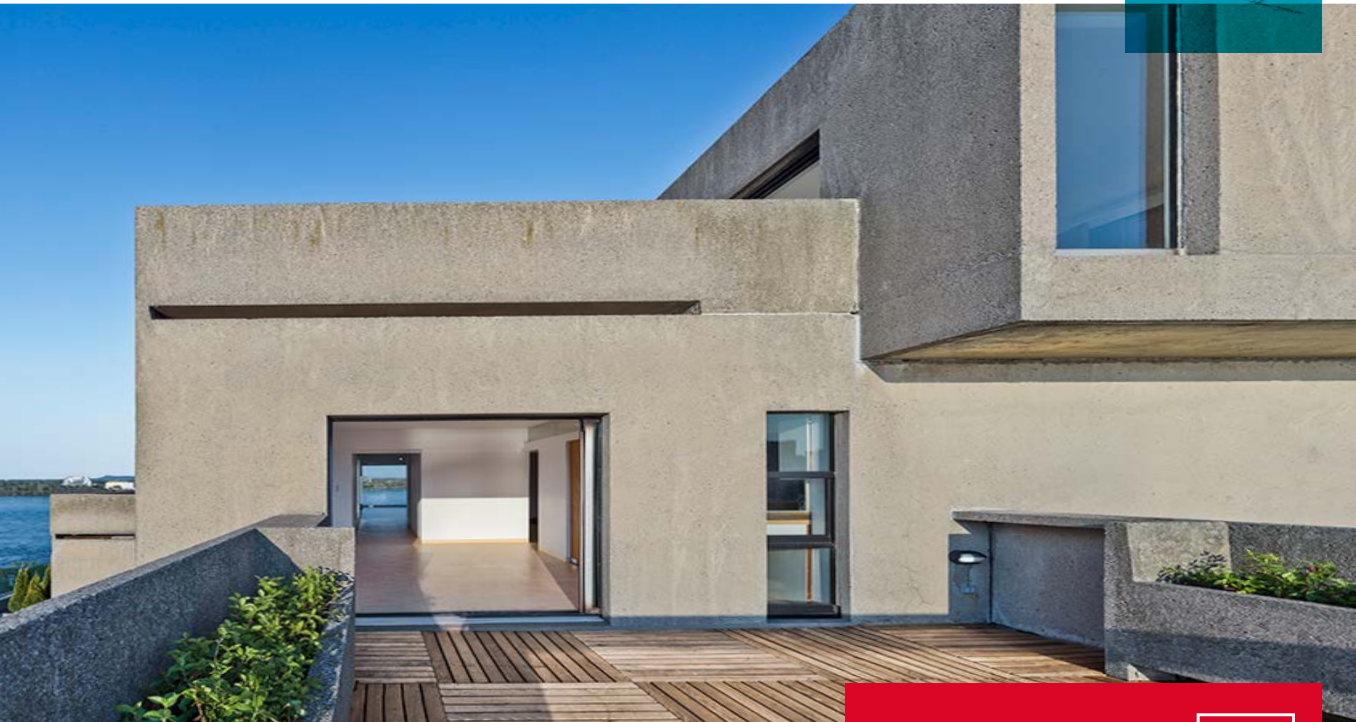
*if you have a renovation project
that we can help you with.*



200 million tonnes of CO₂

Our building insulation sold in 2019
will save up to 200 million tonnes of
CO₂ throughout its lifetime.

Iconic heritage building, Habitat 67, necessitates creative restoration solutions



Perched on the banks of Montreal's riverfront, Habitat 67 is a historical landmark, a building commissioned as part of Canada's Expo 67 centennial celebrations. When designed, and built by architect Moshe Safdie, Montreal's Habitat 67 landed outside the box of traditional architecture with its concrete, modular pod construction, stacked in unusual and irregular configurations. Over the years, it has drawn sightseers and architectural enthusiasts from across the globe to study its unique composition. Habitat, through its design, was meant to introduce a forward-thinking housing option—a hybrid between the single-detached home and urban multi-unit apartment building. It endeavored to provide families with a greater sense of community in higher density dwellings, with gardens, green space, sunlight, terraces, walkways and private streetscapes.

At a glance:



A challenge to restore and renovate a historical landmark lands ROCKWOOL a contract to supply the insulation



Thermal properties



Acoustic capabilities



Fire resilience



The architectural team selected a combination of Cavityrock® and Comfortboard™ stone wool insulation as a non-combustible solution that could effectively address the building's challenges

Balancing Preservation and Performance

When Moshe Safdie decided to undertake a major restoration of his own unit within the Habitat complex, his vision aimed to safeguard the past, while simultaneously making profound improvements to the building envelope. Specifically, the goal to increase its energy efficiency while respecting the building's heritage designation proved a challenge as unique as Habitat itself—one that necessitated an equally inventive, outside-the-box approach.

The Challenge

Architect Ghislain Bélanger of the Montreal firm C012 Architecture worked closely with Safdie's team on the design and restoration process. From an energy perspective, the team came up against an array of difficult parameters:

- The retrofit could not change the looks of the interior or exterior of the unit.
- The building's unusual wall assembly left little space for insulation.
- Raised floors serving as "plenums" for ducts and electricity also posed challenges for insulation and air/vapor tightness.
- A desire to use non-combustible insulation was expressed.
- The insulation had to be removable, so changes could easily be made, if necessary, in future.
- The unlevelled concrete wall surfaces further limited some options.
- The insulation solution needed to address both durability and preservation. Moisture and air management were important factors to combat potential issues moving forward.

The Solution

Weighing their options, the architectural team selected stone wool insulation as a non-combustible solution that could effectively address the building's challenges, while improving efficiency, durability, air quality and air/moisture management. The technical issues proved considerable, and the team turned to ROCKWOOL's Building Science team (RBS) to

help. The RBS team modelled and tested a number of different assemblies. The idea of using the company's Comfortboard™ product inboard of the building's exterior walls at first seemed a reasonable option. However, the team could not resolve the issues surrounding the unevenness of the concrete walls. Normally, one would simply increase the wall thickness in order to square off and create a more level surface, but given the historic designation and inability to modify the interior, a more unconventional approach was applied.

A z-girt system would compensate for any irregularities of the wall surface, while Cavityrock® would improve thermal performance and work in tandem with other details to resolve air/moisture concerns. Modelling proved it to be a suitable remedy. However, the team were under no illusions that it was the perfect thermal solution. However, it would meet other strict parameters and prevent the most pervasive threat that could jeopardize Habitat's durability—moisture.

Ultimately, the team designed an assembly whose components would work in tandem to control air flow and vapor drive and increase drying potential. To prevent any moisture-related issues and better preserve the building envelope, the following wall assembly was employed:

- 1) *The existing concrete walls were stripped back and cleaned—removing some damaged wood and the old polystyrene insulation.*
- 2) *Henry Air Block 31 mm liquid air and water barrier was applied. The product stops water and air penetration, but does not impair the movement of vapor.*
- 3) *A z-girt system was installed against the wall and ROCKWOOL Cavityrock® insulation was added.*
- 4) *CertainTeed MemBrain, a smart vapor retarder was installed to allow the wall to dry either toward the inside or the outside depending on the direction of the water vapor flow (directed by temperature and/or water vapor pressures).*

In the end, the creative approach to the retrofit should help Habitat endure for years to come, while simultaneously improving comfort, energy efficiency, safety and durability. Residents will benefit from more stable and homogenous indoor temperatures, passive fire protection due to the building's non-combustible stone wool insulation, and better indoor air quality as a result of CAVITYROCK's mold and moisture-resistant qualities. Moving forward, the preservation and improvements on Moshe Safdie's unit can serve as a model for similar, future retrofits.

Click Here - if you have a retrofit project that we can help with.



21.2 million tonnes of CO₂

Retrofitting large buildings in Canada will help achieve a reduction in GHG emissions of at least 30 per cent—12.5 million tonnes by 2030, with the potential to reach 51 per cent — 21.2 million tonnes.

Hotel Theatre Figi - Striking, effective and in-budget



Since its humble start as a bakery in 1850, the Hotel Theatre Figi has been an important social gathering point in the town of Zeist in the Netherlands. Under the careful ownership of Ruijs family since 1917, the hotel and concert hall were added to the establishment in 1925, and a full rebuild took place in 1994. By 2017, Diederik and Victoria Ruijs – the third generation in charge of Figi – believed it was time to renovate the building once more, with the theatre lobby ready for a makeover in 2018.

At a glance:



A creative architect and a convincing team at Rockfon Netherlands found a bold and fresh way to improve the acoustics and upgrade the look of a tired theatre lobby.



Acoustic capabilities



Aesthetics

The challenge

The Ruijs family hired interior architect Gerben van der Molen, from Stars Design in Schiedam, to create a fresh and functional redesign for the theatre lobby. A busy space that acts as both the cinema and theatre lobby, optimising acoustics was high on the agenda. The goal was to find a ceiling solution that was both functional and affordable, but also stylish and in line with the creative environment of the lobby. And installation should be hassle-free to ensure that the installation renovation took place to time so that the cinema and theatre could reopen quickly to an appreciative public.



The stunning ceiling used Rockfon Blanka® in combination with a new 3D grid application, Rockfon Color-all®.



Why are acoustics so important?

Poor acoustics are something we've all experienced. Think about that time you were sitting in a hip restaurant with friends, and you ended up forgetting about how delicious the food was as you had to shout to sustain a conversation. Or that evening when your kids were playing in the room next to you, and you couldn't focus on the T.V. show you were watching because the noise seemed to bounce off the walls and drown it out. Well, that's exactly what was happening. When sound waves hit hard the surfaces in a room – such as walls, floors and windows – the audible energy wave that we call noise reflects back into the room causing the overall noise level in the room to rise. Whether at home, in the office, at school or – as in the case of the Hotel Theater Figi – in the cinema lobby, poor acoustics can be very irritating. Considering that we spend the vast majority of our time inside, it is important to consider the impact acoustics have on our health, concentration, productivity and overall well-being.

There are multiple studies highlighting the importance of acoustics as a significant physical feature of our indoor environment and the impact

that it has on our psychological and physiological well-being. Short term exposure to poor acoustics leads to a lack of concentration; it can increase difficulty processing information and performing tasks and affect speech intelligibility, causing everyone in the room to speak louder. This is known as the Lombard effect or the "Cocktail Party" effect. While in the short term, this can cause irritation, long term effects of continuous exposure to indoor noise pollution can lead to hearing loss, increased heart rate and high blood pressure. The social cost of poor acoustics is expensive, accruing an annual cost of 30-40 billion Euros in Europe alone¹.

To reduce the consequences of uncontrolled acoustics, it's important to introduce materials that absorb and dampen ambient sound levels, preventing reverberation. And to achieve proper sound absorption we need to control the ambient sound pressure levels in a space, which increases speech intelligibility and makes conversation easier to hear and understand. And this is where innovative solutions from Rockfon can make a true difference.



Watch how we put stone wool's acoustic properties to the test

¹ http://www.noiseineu.eu/en/14-socioeconomic_impact/subpage/view/page/57

“When reopening the lobby of Hotel Theater Figi in Zeist, all the guests were talking about the ceiling. That's the best compliment we could get.”

Gerben van der Molen, interior architect from Stars Design



The extra-white surface provided by Rockfon Blanka® secures optimal light reflection and diffusion.

The solution

The architect worked closely with the team at Rockfon, part of the ROCKWOOL Group, to find a solution that stood out from a standard suspended ceiling, but was still within budget. Together, they developed a 3D solution based on a stripped down system ceiling using standard acoustic ceiling panels and grid profiles.

"When the interior architect shared his vision with me, we were able to create a whole new application using available components in a different way," explains Anton Faber, key account manager Rockfon. "A mock-up at the Rockfon Development Center in Wijnegem convinced both the architect and the client to take a leap of faith and execute it for the first time."

Transforming a traditional stripped-down rail system

The striking ceiling was created using Rockfon Blanka® in combination with a new 3D grid application, Rockfon Color-all®. By using c-profiles – the product used to close gaps between grid and tiles – the black rail system was highlighted, and then the ceiling panels were placed in an oblique position. This innovative solution allows the architect to maximise acoustics while playing with heights and patterns at the same time, creating a whole new experience. Rockfon Blanka® has a fully matt, smooth and extra-white surface, with high light reflection and light diffusion that contributes to energy

savings and a bright and comfortable indoor environment. To create a playful contrast, Gerben van der Molen chose Rockfon Color-all® in charcoal. The 3D grid application offers new design freedom due to exposed, semi-concealed and concealed edges in a large variety of module sizes and colours.

A result that speaks for itself

The finished ceiling not only looked bold and fresh, it also provided great acoustics, and contributed to the experience of every visitor.

"A suspended modular ceiling is often a 'must' when looking for a low-budget ceiling solution," says Gerben van der Molen, interior architect from Stars Design. "However, a visible grid is not always the most beautiful aspect of the design and architects often try to hide it. But why not use the grid to our advantage and make it stand out more? I discussed my vision with Rockfon key account manager, Anton Faber. Together with the technical specialists, we were able to make this happen by developing a new 3D-application using available components."

An aerial photograph of a dense city skyline, likely New York City, taken from a high vantage point. The sky is a mix of deep blue and orange, indicating sunset or sunrise. A faint rainbow is visible in the upper left portion of the sky. The city below is a dense collection of skyscrapers and buildings, with the sun casting a warm glow on the scene.

50-90%

50-90 percent of the global energy used in buildings today can be saved by applying existing energy efficiency products and technology.

Enclosure Renewal Project



Project Description

Winner of a 2013 “Canadian Green Building Technical Achievement Award” and featured in SAB Magazine, The Belmont, originally constructed in 1986, is a 13-storey residential building on the west side of Vancouver. After weighing various options on how best to maintain and reinvest in its property, the Strata Corporation decided to proceed with a building enclosure renewal project in 2012.

At a glance:



Stone wool is helping keep residents safe and comfortable.



Fire resilience



Robustness



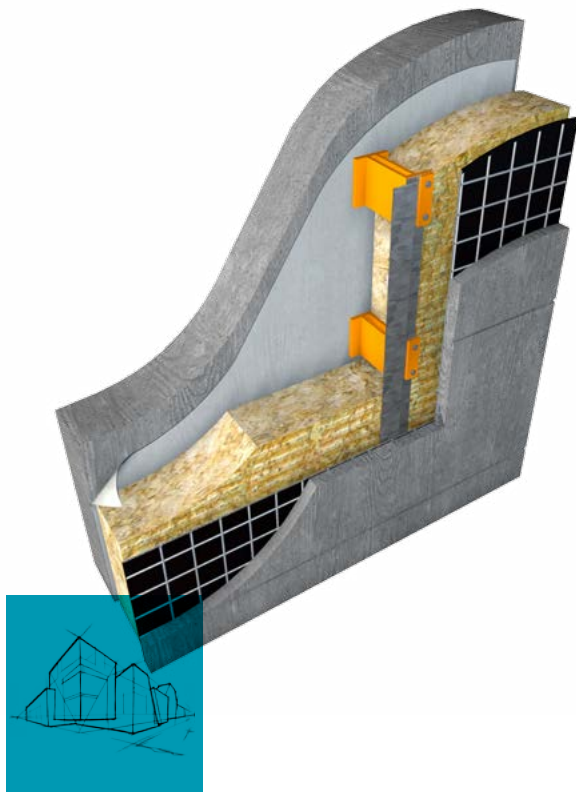
Thermal properties

Before the renewal, the existing exterior walls were exposed cladding with 2 inches (50 mm) of foam insulation at the inside, with an overall effective R-value of R-4. For the renewal project, the walls were over-clad with 3.5 inches (89 mm) of CAVITYROCK® stone wool insulation behind stucco and metal panel cladding. The cladding and insulation were held in place using fiberglass Cascadia Clip®, which significantly reduce thermal bridging compared to a more traditional metal girt cladding systems. This assembly increased the overall effective R-value to a R-16 for the exterior walls.

Window replacement and air tightness improvements were also made to the enclosure. Energy savings as a result of the Enclosure Renewal Project were estimated through whole building energy modeling, and are predicted to be a 20% decrease in overall building energy usage, and 90% for in-suite space heating energy. This retrofit is expected to nearly eliminate the need for electric baseboard heating and cut total building suite heating costs from approximately \$18,000 to just \$2,000 per annum.

Exterior Insulated Rainscreen

New Cladding Stucco and Metal Panels
Fiberglass Cascadia Clip® with 1" Steel Z Girt
3.5" CAVITYROCK® Insulation
Vapor Permeable Coating
Existing Concrete



ROCKWOOL™ Products Installed

ROCKWOOL CAVITYROCK® was used in the rainscreen system for its stability under wide temperature variations, its fire protection and its sustainability properties. CAVITYROCK® has a long term stable R-value and is a non-combustible, water repellent, sound absorbent and sustainable product.

Benefits

ROCKWOOL stone wool insulation has a long term stable R-value, is dimensionally stable, fire resistant, water repellent, non-corrosive, sound absorbent, will not promote mold and fungi growth and is environmentally sustainable.

Consultant:

RDH Building Engineering Ltd.
Warren Knowles, P.Eng.

Contractors:

BJ Plastering
Link Design Services Inc.

Location:

Vancouver, BC

Project Timeline:

2012

Cavity Wall:

17,000 sq/ft

6.36% GDP in America

Construction is very relevant in our economy, employing ~7 percent of all workers and contributing to 6.36 percent of the GDP in America.

Source: Statista (<https://www.statista.com/statistics/226361/us-construction-spending-relative-to-gdp/>)

85 years of the Moscow metro: Speed, precision and safety



Having recently celebrated its 85th birthday, the Moscow metro has undergone many changes during its lifetime.

From expanding to 15 lines with 275 stations to establishing the Moscow Central Ring and the Moscow Central Diameter, the metro continues to evolve and grow in importance as a means of transport. But one thing remains unchanged, and that's the priority of the safety of passengers and employees.

At a glance:



Stone wool is helping the Moscow Metro to keep commuters safe and comfortable.



Fire resilience



Robustness



Thermal properties

The challenge

Every day, the huge metropolis of Moscow's is served by a hard-working metro system that transports up to 10 million people. Considered to be one of the most beautiful metros in world, it's a well-developed underground system that allows the city dwellers save valuable travel time. But like all metros, it's considered to be a high-risk zone. The very nature of a metro means that many people are accumulated together in a confined space, deep beneath the streets. In the case of danger, it's very difficult to evacuate people quickly. A potential fire – and the related smoke – in such a setting is deadly. That's why designers need to pay extra attention to safety issues when considering construction within the metro system. With the safety of employees and passengers at heart, the Moscow metro has included non-combustible thermal insulation made from ROCKWOOL's natural stone wool as a key element within its renovations and new builds.

The solution

On May 15, 2020, the Moscow Metro celebrated its 85th anniversary. Transporting approximately 2.5 billion passengers per year, and with the double-track lines covering circa 440 km, primarily underground, the number of stations to allow commuters to access the metro is steadily growing. In addition to this new construction, there is constant renovation taking place throughout the metro to increase the level of comfort and safety with the help of modern and high-quality materials and technical solutions.

Metro stations at Rasskazovka, Olkhovaya, Michurinsky Prospekt, Nekrasovka and the transport hubs at Kosino-Ukhtomskaya and Likhobory are just some of the projects that implemented ROCKWOOL's non-combustible products. To secure protection against the weather – and to add extra fire safety – VENTI BATTS slabs were used for their façades. And at the Nekrasovka station, ventilation systems using ALU1 WIRED MAT were installed to ensure extra resistance to fire.

It wasn't only the station façades that got a makeover, the roofs were also refurbished. Filatov lug and Prokshino stations opted for ROCKROOF – a complete



Robust ROCKWOOL products, based on stone wool, help the façades of many Moscow Metro stations stay strong throughout extreme weather conditions.

insulation system where installation is made simple, as every element needed is included, has been checked and tested for safety and works perfectly in conjunction with other components. ROCKROOF's thermal properties ensure that commuters experience a pleasant indoor environment when passing through these stations, and as a fire-resistant insulation, secure a safe journey for everyone.

Why products from ROCKWOOL?

Being involved in such a long-term – and prestigious – project is a testimony to both the effectiveness of ROCKWOOL's products and the hard work of the Russian team. "We're lucky here at ROCKWOOL Russia that our partners are very loyal to our company brand. They know how good our products are and believe in our quality," explains ROCKWOOL Russia's Managing Director, Marina Potoker.

By the end of 2022, a further 57 new stations will have opened within the Moscow metro, extending the length of the underground network by 450 km. For 90 percent of the capital's residents, the metro will be within walking distance from their homes. And innovative products from ROCKWOOL mean that the transport won't only be more accessible, but also safer than ever.

// *Because we do not build or renovate as we used to do 50 years ago, being aware of the possible consequences of this change, like increased fire risks for example, is critical. Non-combustible materials have an important role to play in keeping modern buildings and their occupants safe."*

Andrei-Mircea Corches - Regulatory Affairs Partner, Fire Safety at ROCKWOOL Group



Fire safe insulation from ROCKWOOL

Installing fire safe insulation is a great way to ensure the safety of building occupants – and to prevent the spread of fire to limit structural damage.

As a fire can start in any part of a building, it's important to install fire resistant insulation wherever possible. Made from non-combustible stone wool, ROCKWOOL's insulation slows down the spread of fire, containing it within one compartment of a building for as long as possible. This provides vital time for occupants to escape during a fire, while creating a safer environment for firefighters to combat the flames.

ROCKWOOL insulation is made from non-combustible, fire-resistant stone wool that can withstand temperatures above 1,000°C. This helps limit the spread of fire in a building. With minimal organic content, no significant toxic smoke is produced either.

Our insulation is classified as A1 according to



Deepen your understanding of fire safe insulation

the Euroclass system. These are the top fire performance classifications, and are based on several characteristics including:

- Ignitability
- Flame spread
- Heat release
- Smoke production
- Propensity for producing flaming droplets/particles

What's more, ROCKWOOL insulation also offers additional benefits, including:

- Thermal properties – in the cold winter months, heat is retained in buildings to keep residents snug and warm, and in the summer time, the same properties help cool air stay within the walls, keeping people cool and fresh.
- Acoustic performance – noise pollution is blocked and absorbed, particularly in noisy urban areas.
- Robustness – made from sturdy stone wool, it provides stability when used in high-rise developments.
- Aesthetics – fire resilient insulation solutions are flexible and can be shaped according to the building.
- Water repellence – in the event of rainfall or moisture, insulation can repel water to keep the building dry.
- Circularity – made from recyclable materials and using environmentally-sustainable processes.



ROCKWOOL's fire-resistant insulation secures a safe journey for everyone using the metro – and a pleasant indoor environment.



Many Moscow Metro stations are benefiting from the unique properties of stone wool.

Click here

if you'd like more ROCKWOOL inspiration for your renovation project.

18,000 jobs

For every \$1 billion invested in renovation, 18,000 local jobs are secured.

Reviving aging housing stock for modern living



ERA Architects

Project Overview

The Ken Soble Tower project sought to rehabilitate a post-war apartment in Hamilton, Ontario. The building was completely upgraded, inside and out, to achieve Passive House standard, reducing greenhouse gas emissions by an impressive 94%. The success of the Ken Soble Tower retrofit demonstrates a pathway to revitalizing similar aging building stock across North America through ultra-low energy retrofits. Additionally, it serves as an example of the positive impact such projects could have on the built environment and local communities, while improving occupant quality of life, reducing operating expenses, and contributing to overall carbon reduction in urban areas.

At a glance:



Stone wool was used in building one of the largest sustainable and affordable housing developments in the world.



Fire resilience



Robustness



Thermal properties

The Goal

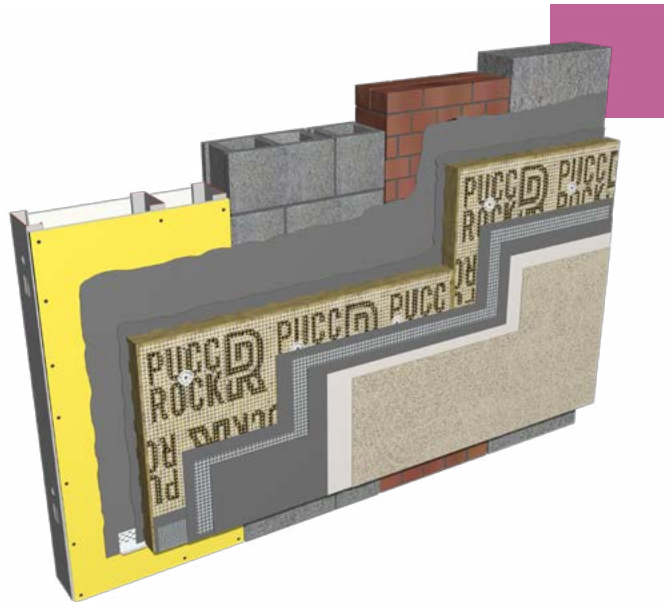
Built in 1967 at 18 stories and 80,000 square feet, the Ken Soble Tower had been in a state of deterioration for some time as the oldest high-rise multi-residential building in CityHousing Hamilton's portfolio. The goal was to retrofit the building to achieve EnerPHit certification, a branch of the Passive House (PassivHaus) standard designed specifically for retrofits. The building overhaul would include nearly every facet of the building from the building envelope, mechanical systems, electrical, plumbing, and safety systems to interior upgrades to its 146 units to support aging in place, accessibility, comfort, and overall improvement of the occupant experience. As public housing, cost was a key consideration, and the team set out to complete the retrofit at a fraction of the cost of a new build.

The Challenge

The current building had significant challenges including a deteriorating envelope, lack of insulation, inadequate ventilation, and lack of thermal controls. While ERA Architects was originally going to re-clad the building with an entire wall assembly outside the existing brick, a visit to the ROCKWOOL booth at the Construct Canada exhibition changed everything..

The Solution

After introducing the architect to the DuROCK PUCCS NC EIFS system incorporating ROCKWOOL stone wool, the entire plan for the building envelope was revised. The resulting cladding design includes a six-inch thick stone wool EIFS system. ERA Architects liked three main things about the system: first, and most obviously, the non-combustibility (important given the vulnerability of the senior-aged occupants); second, the excellent moisture control offered by the stone wool and the unique, built-in drainage layer cut into the back side of the insulation; and third, the liquid applied water resistive barrier (LAWRB). In all, 50,000 sq. ft. of ROCKWOOL stone wool product was incorporated into the new façade, helping to realize the R-38 effective R-value required to achieve EnerPHIT certification. The EIFS system, including



ROCKWOOL stone wool, fit the need for cost-effectiveness (the system helped reduce labour costs), ease of install, high-quality composition, a favourable sustainability profile as well the top-notch technical support, provided by ROCKWOOL and DuROCK. The upgraded building envelope with inorganic stone wool will also help contribute to better air quality, since mold was previously an issue. Additionally, it created a more resilient building, able to stand up to harsher conditions as a result of climate change in the region, effectively future-proofing the building and better protecting its senior residents. In fact, thanks in part to its tight and super-insulated building envelope, ERA Architects notes that Ken Soble Tower "demonstrates passive resilience to extreme conditions: In case of failure of active systems, the building will stay warm in winter for up to two days (compared to 2 hours in a typical building) and below dangerous heat levels in summer for up to four days (compared to half a day in a typical building)".

Overall, Ken Soble Tower will now provide residents with improved comfort and control of their indoor environments while substantially reducing energy demand. At its peak, the total energy needed to heat or cool each unit will be equal to the energy needed to run 3 incandescent light bulbs (100W). The retrofit now positions Ken Soble Tower as a true asset as well as a proud and prominent landmark in Hamilton's waterfront—fitting, as it now stands as one of the world's largest EnerPHit certified projects.



ERA Architects

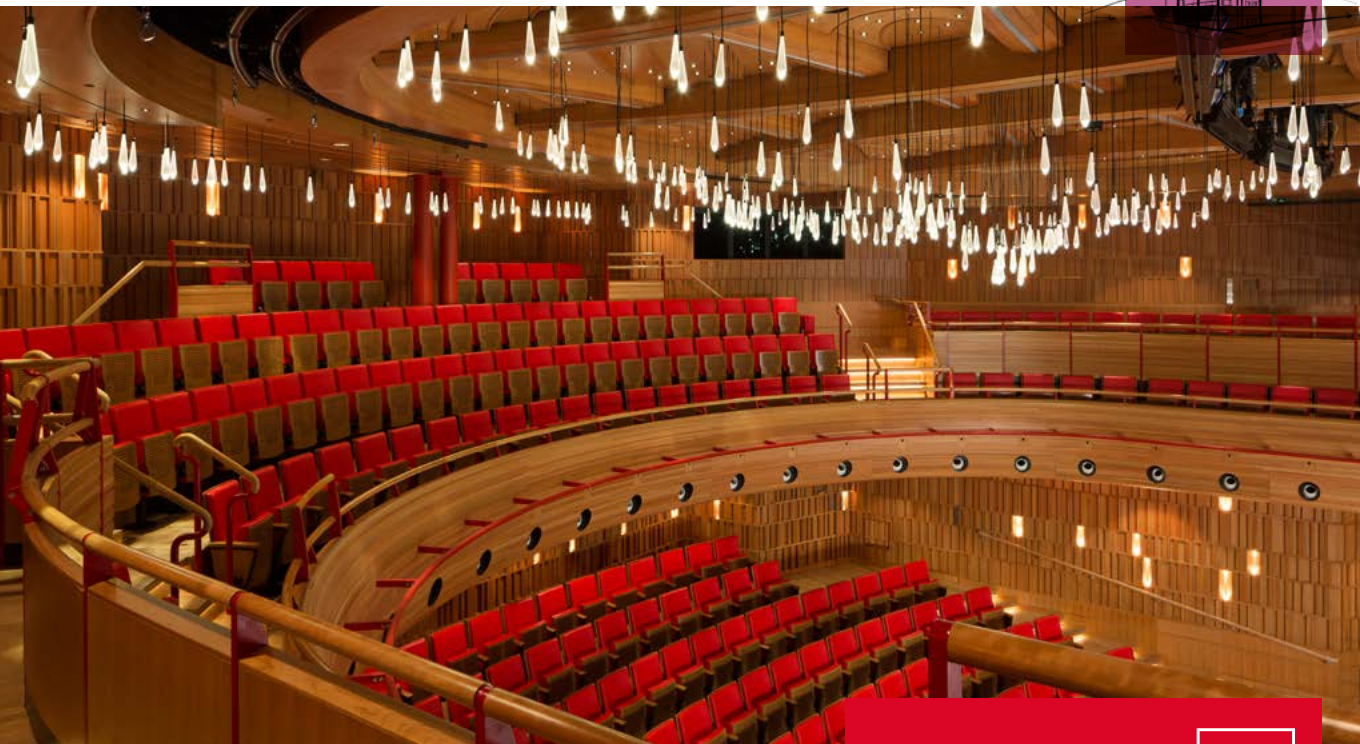


28%

Across the planet,
more than 28 percent
of greenhouse gas
emissions derive from
energy use in buildings.

Source: Global Status Report 2017, figure 7 (IEA)

A master class in acoustics at The Royal Academy of Music



The recent project marks one of the most significant building and renovation projects in the Academy's near-200-year history.

To achieve the very best performance demands commitment, skill and passion. The team behind the recent reinvention of the Royal Academy of Music in Regent's Park, London called on all three qualities to create the stunningly beautiful, acoustically brilliant and inspiring spaces for staff and students. The project included completely refurbishing the 309-seat Susie Sainsbury Theatre and creating the new 100-seat rooftop Angela Burgess Recital Hall. Alongside these impressive spaces, the Academy also renovated 14 practice and dressing rooms, developed five new percussion studios, a large refurbished jazz room and a new control suite for its audio-visual recordings department.

At a glance:



Improving acoustics is an important aspect of most renovations, but never more so than when revitalising London's Royal Academy of Music.



Acoustic properties



Thermal properties



Fire resilience

The challenge

Creating impeccable acoustic environments was key during the project. But it was equally important to control how sound travelled throughout the spaces, while ensuring effective isolation from sounds from other areas.

The new performance spaces are hidden behind the listed façade of the Royal Academy of Music's Edwardian premises, surrounded by Grade I and Grade II listed buildings and located within the Regent's Park conservation area. The architects, Ian Ritchie Architects, needed to carefully design the new spaces so that they would seamlessly blend into the historic site.

The new Angela Burgess Recital Hall sits above the Susie Sainsbury Theatre, meaning it needs to be acoustically isolated from what was below as well as the other buildings in the vicinity.

"This one of the biggest challenges for the project," comments Richard Shanahan, Director at All Metal Roofing. "Sound quality was of absolute importance within the performance spaces themselves, but we also had to limit its travel around the building and externally."

The solution

As part of the redevelopment of the building, the Royal Academy of Music worked with engineering consultancy, Arup, to create spaces that were completely isolated in terms of acoustics and noise transfer.



The renovation saw the creation of spaces that optimised acoustics and were completely isolated from external noise.

Why ROCKWOOL for the Royal Academy?



ROCKWOOL worked with the team at All Metal Roofing to specially create a 50mm version of the HARDROCK® Multi-Fix solution. Its unique Dual Density stone wool composition is why HARDROCK® Multi-Fix (DD) is renowned for its excellent acoustic reduction, absorption and impact performance, whether from people, machinery or rain on the roof.

HARDROCK® Multi-Fix (DD) is dimensionally stable and will provide long term consistent thermal performance over its lifetime. It also provides the highest fire safety rating of any flat roof board insulation on the market with a Euroclass (A1) non-combustible fire classification and LPCB approval (LPS 1181 Part 1, BS 476: Part 21, EN 13501-1)

All Metal Roofing also installed ROCKWOOL RWA45 100mm and 50mm insulation. ROCKWOOL RWA45 has been developed for thermal, acoustic and fire performance in a range of construction types. RWA45 is made up of high-quality resin bonded slabs in a variety of thicknesses. Specialist facings are available to order to meet the specifications of unique projects.



Learn more about improving sound quality of your building



We are delighted with the finished result. Working with ROCKWOOL to understand and guarantee the sound performance of the insulation was a crucial part of the project."

Richard Shanahan, Director at All Metal Roofing

This included looking at external noise such as the nearby underground and, as the various concert spaces are so tightly intertwined, the sound coming from the individual rooms. Arup, Ian Ritchie Architects and The Royal Academy of Music teams collaborated to create spaces that were structurally isolated from each other to minimise sound transfer. The Recital Hall itself is actually built as a self-supporting space placed on top of the existing building.

In order to complement the structure of the building and ensure each space was acoustically isolated, the contractors for the project, All Metal Roofing, selected insulation from ROCKWOOL as the ideal material.



The renovation created multiple new spaces that are suitable to host concerts and events.

"We created a multi-layered approach to the installation, which included installing plywood with vapour and acoustic barrier insulation on both the floors and walls," explains Richard Shanahan. "We knew we could trust the ROCKWOOL insulation for its performance and acoustics properties. We worked with the ROCKWOOL team closely during the specification stage to evaluate the acoustics properties of the insulation to ensure it met the strict criteria of the Royal Academy of Music."

The ROCKWOOL slabs can be applied to an array of general building applications for acoustic and thermal insulation of partition walls, ceilings, floors and roofs. The multi-use solution is well suited for easy application throughout constructions. Importantly for the Royal Academy of Music project, ROCKWOOL RWA45 insu-



The project has impressed many, winning numerous awards since its' completion.

lation is both water repellent and vapour permeable, which helps to prevent moisture build-up, damp and rot; condensation was a particular concern due to the type and age of the building.

Meeting royal standards

The renovation project has been a huge success for the Royal Academy, with the result being that they have more suitable space to hold concerts and events. The ROCKWOOL solution complements the structure of the building and ensures that each space is acoustically isolated, meaning that every performance is fit for a king.

"We have estimated the performance of the roof at 58db and the wall at upwards of Rw 65 dB," says Richard Shanahan. "This means we met the criteria the Royal Academy of Music required."

And it's not only those involved in the project that are impressed. The project has already won the RIBA London Building of the Year and the AJ Retrofit of the Year Award as well as many others since its completion in 2018.

[Click here](#)

if sublime acoustics are vital to your renovation project.

100x

Over the lifetime of its use, the building insulation we sold in 2019 will save 100 times the carbon emitted in its production.

Bièvre towers – When being fire-safe is beautiful



Watered by the Bièvre, a tributary of the Seine, the town of Antony is located 11 km outside the centre of Paris. When aging residential towers located on the hills needed refurbishment, it proved to be a chance to improve the look and general attractiveness of the area.

The challenge

Many architects face the challenge of creating buildings that ensure optimum fire safety – but that also meet their design dreams. There are many ways to comply with safety and building regulations, but what's the best option when if you don't want to compromise on design?

At a glance:



Sometimes renovation can result in a complete make-over for the building, proving that practical can be beautiful!



Fire resilience



Aesthetics



Thermal properties



The photo to the left shows the Bièvre towers before their renovation, and the photo to the right shows how façade cladding upgraded their look as part of their renovation.

The solution

Irèna Morawiec, from Architecte Associée Groupe, Arcane Architectes, was tasked with designing the upgrade of the Bièvre towers. Located on the hills in the leafy Parisian suburb of Anthony, she was asked to dramatically improve the look of the building as part of the refurbishment. Their prominent location in the town meant that their look affected the appeal of the area. Due to the fact that they are residential towers, the moment Morawiec saw their height and number of windows, she realised that fire safety would also play a large part in their renovation. After careful research,

she discovered that innovative façade cladding and insulation could make big difference to both the safety and the appearance of the buildings.

“After we had done our research very thoroughly, we decided to choose a combination of stone wool insulation from ROCKWOOL and Rockpanel Woods and Colours for the façade cladding,” explains Irèna Morawiec.

“ Rockpanel Woods look so much like real wood. I find it absolutely astonishing.”

Irèna Morawiec, Architecte Associée Groupe, Arcane Architectes.

A basalt-based façade – that looks like wood!

In high-rise buildings, fire safety is the number one priority – and with a beauty-boost also on the agenda, Morawiec truly believed that the Rockpanel and ROCK-WOOL combination was the perfect solution. The architect group presented two designs to their client, Hauts-de-Bièvre Habitat – the housing association who own the towers.

“The first option included a faded colour effect and the second one looked more like a chocolate fountain,” said explains Morawiec. “The second option was selected by the building owner and it works very well. Rockpanel Woods look so much like real wood. I find it absolutely astonishing.”

As the housing complex was very outdated, their improved new looks delighted the residents – as did the peace of mind knowing that the non-combustible stone wool insulation vastly improved their safety.



Using Rockpanel Woods and Colours for the façade cladding gave the housing complex a beautiful, modern look.

Rockpanel Woods

A new way to give your building a natural and harmonious look, boards from Rockpanel Woods are manufactured through a careful and innovative production process to look just like real wood.

This product combines the properties of wood and stone to create a unique panel that offers the authentic look and workability of wood with the durability, robustness and fire resilience of stone. The boards are sustainable and very low-maintenance, with a gorgeous wood look that doesn't rot or burn.

The new eye-catching exterior of the towers also contributes to the general attractiveness of the neighbourhood as a whole.

In France, using fire resilient façade panels on high-rise buildings is relatively new, as traditional 'bavettes' are often used. The combination of light-weight panels that are fire resilient and available in many attractive designs is what made Rockpanel stand out in this case. And although it was the first time for the architect group to use this solution, it certainly won't be the last.

Click here

if you want advice about how best to give your building a makeover.



5-6%

Based on a renovation of medium depth, the internal rate of return (IRR) over 30 years is 5-6 percent.

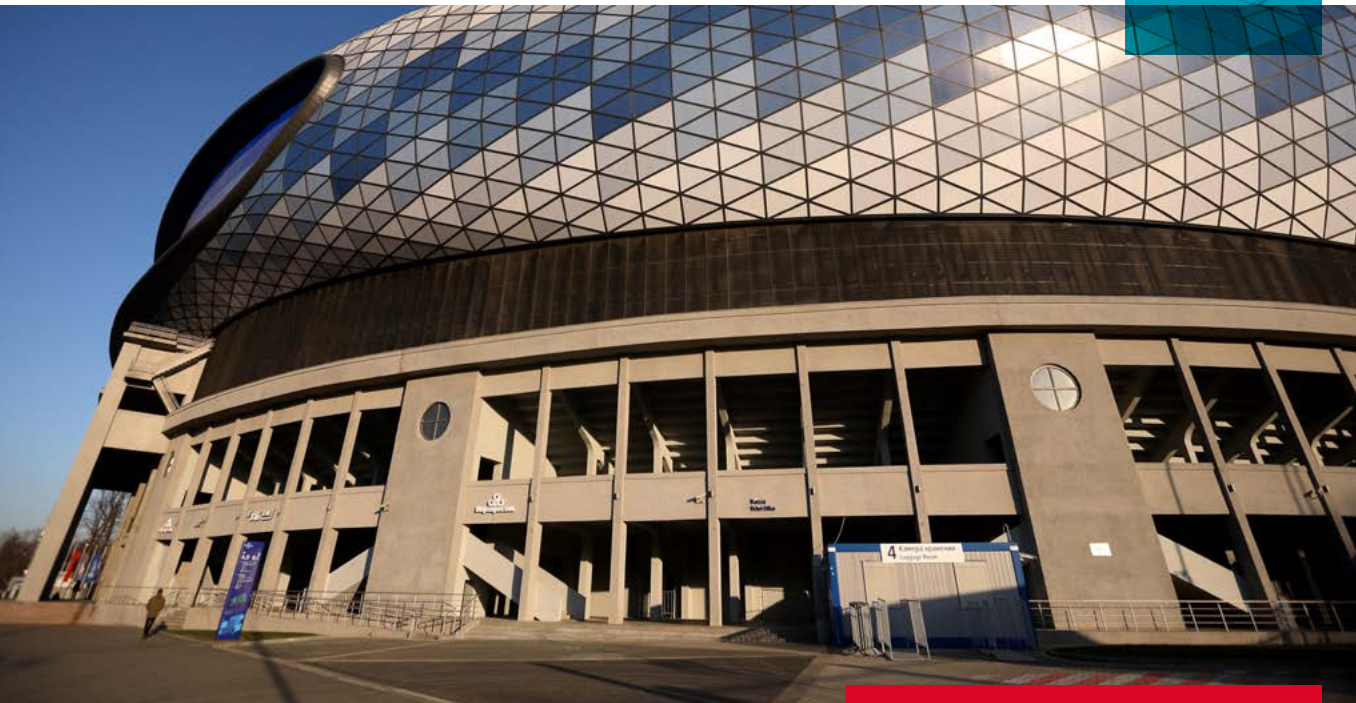
Source: European commission (2019)

A photograph of a modern building with a glass facade, heavily covered in lush green plants and flowers, illustrating a vertical garden or living wall. The plants are arranged in a dense, multi-layered fashion, cascading down the side of the building. The building's structure is visible through the glass panels, showing a grid of windows and balconies. The overall scene is vibrant and green, contrasting with the dark, metallic frame of the building.

70%

Buildings can save a staggering 70 percent more carbon emissions than the next most cost-effective sector – industry – with the same level of investment.

VTB Arena park – Much more than a world-class stadium



It may resemble a futuristic spacecraft, but the stunning VTB Arena has taken great care to preserve its ties to history. The reconstructed and refurbished home of FC Dynamo Moscow, one of Russia's most famous soccer clubs, is built on top of the original 1928 stadium's perimeter wall, with a statue of legendary goalkeeper, Lev Yashin, gracing the main entrance.

The stadium is part of the spectacular project referred to as VTB Arena Park. Spanning 300,000 m², the project also includes the Dynamo hockey rink as well as a park, shopping and entertainment centre, office and apartment buildings, five-star hotel, and an underground car park with 1,600 spaces.

At a glance:



A celebrated soccer club, a 5 star hotel, luxurious apartments and a luscious park, the VTB Arena certainly has it all – including copious quantities of stone wool to insulate the roofs, walls, floor, pipes and ductwork.



Acoustic properties



Fire resilience

The challenge

Located just five km from the Kremlin, the project's size and prestige meant that it received a lot of public attention – not least because the stadium belongs to the legendary football club, Dynamo Moscow. The historic stadium walls were preserved as part of the reconstruction, with many die-hard fans eagerly awaiting the final result, so there was no room for mistakes!

The goal of the project was to combine sports, entertainment, commercial and residential facilities in a unique location within the historical green area at the very heart of Moscow. Its very nature means that people – their comfort and safety – was key to its success. Only the best materials were considered for the construction – and fire safety, energy efficiency, thermal insulation and noise reduction was high on the list of the owners' priorities.

And unsurprisingly, considering massive size and prominent location of the project, time was a critical factor.



The historic stadium walls of Dynamo Moscow were preserved as part of the reconstruction.

The solution

Sergey Kuznetsov, the current Chief Architect of Moscow, was managing partner of the architectural association, SPEECH Tchoban & Kuznetsov, who looked after the general design of the project. For a prize-

Dynamo Central Stadium – A short history

Designed by architects Arkadiy Langman and Lazar Cherikover, Dynamo Central Stadium was established in 1928. The Dinamo metro station opened in 1938, making the stadium much more accessible to the general public. An athletics track – no longer in use – circles the football pitch, and a monument in honour of legendary goalkeeper, Lev Yashin (1929-1990), stands at the stadium's north entrance with VIP boxes positioned above the entrances to the north and south stands.

In 2008, the stadium celebrated its 80-year anniversary – and during the same year, it closed for demolition, with FC Dynamo Moscow playing their farewell match on November 22, 2008. The stadium's main tenant, FC Dynamo Moscow, moved to Arena Khimki in the Moscow suburb of Khimki.

Today, the Dynamo Central Stadium – a multi-functional sports and entertainment complex – has been developed as part of the overall reconstruction of the stadium. The stadium and arena share one roof within the boundaries of the historic stadium's walls, making the project unique. The surrounding residential area, Arena Park, hosts the five star Hyatt hotel, offices, residential buildings and shopping, with the complex served by two metro stations.

winning development praised for its contemporary and innovative approach, what better than using prize-winning insulation, also famed for modern innovation. A match made in heaven!

// *If you look at the diversity of the spaces in this complex, combined with the millions of people expected to use them each year, helping the owners achieve a high level of fire safety, energy efficiency and comfort is quite rewarding, especially for such an important project like this."*

Marina Potoker, Managing Director, ROCKWOOL Russia.



The VTB Arena park project has allowed FC Dynamo Moscow return to their original home. The space also includes the Dynamo hockey rink, a park, a shopping and entertainment centre, office and apartment buildings, a five-star hotel, and an underground car park.

ROCKWOOL's dual density products were key in clinching the deal. Time was of utmost importance and installation time is slashed by 50 percent when using dual density products. As a primary supplier, ROCKWOOL has a variety of its stone wool products installed across all VTB Arena Park spaces. This includes more than 130,000 m² of several types of stone wool insulation in the floors, walls and roof. Not only that, but 70,000 m² of stone wool technical insulation cover the heating pipes and ductwork, ensuring the building's utility infrastructure is fire safe and that precious heat is preserved to keep visitors warm throughout Russia's cold winters.

The VTB Arena park project has breathed new life into the area, and ROCKWOOL is proud to be part of this exceptional project that brings entertainment, comfort and safety to city revellers in Moscow.

Dual density technology

ROCKWOOL uses a special manufacturing process to create dual density products. Consisting of a high-density outer layer and a lower-density sub-layer, this technology brings extra benefits to many of the ROCKWOOL products; including flat roof insulation, ETICS and ventilated façade insulation products. Dual density products are exceptionally strong, with a firm and robust surface that is balanced by a less dense, more flexible underside that can better adapt to unevenness in the substrate. Dual density technology provides compressive resistance, excellent sound absorbency and many other benefits for different applications.

Click here

*if you have a renovation project
that we can help you with.*

Resilient buildings are crucial in adapting to a 1.5°C world, and urban design and spatial planning policies need to consider extreme weather conditions to ensure comfort and avoid displacement.



We're ready to bring your renovation project to the next level!

And you're just one click away from access to experts who can turn your renovation dream into a reality.



Need support from our experts?



Want more inspiration?



Need further renovation insights?